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The discovery of the male of "*Thecla malayica* PENDLEBURY", with its relationships to *Austrozephyrus absolon* (HEWITSON, 1865)

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In 1939 PENDLEBURY described two species of the tribe Theclini, namely, *Thecla malayica* from Malay Peninsula based upon a female specimen, and *T. borneana* from Borneo based on a male specimen. Concerning with these two species, CORBET (1941) assumed that they were subspecies of *absolon* HEWITSON, and said: "*T. malayica* PEND. and male holotype of *T. borneana* PEND. described in 1939, F. J. M. S. Mus., 18: 391-392, almost certainly represent subspecies of *T. absolon* HEW., hitherto known only from Java".

In a revision of the genus *Neozephyrus*, HOWARTH (1957) studied the male genitalia of the holotype of *borneana*, and clarified it is a distinct species quite different from *absolon*, but for *malayica* he could not definitely decide whether it belongs to a subspecies of *absolon* assumed by CORBET or represents a distinct species because the only known specimen* (holotype) is female, and temporarily treated it as a subspecies of *absolon* according to CORBET.

In the same paper, HOWARTH founded a new genus, *Austrozephyrus*, with the type-species *absolon* and included *borneana* to it. Under such circumstances, the discovery of the male specimen of *malayicus* is expected to decide the systematic position of this form with certainty.

During his collecting trip in Malay Peninsula in April of 1969, one of us, NISHIMURA, fortunately collected a male specimen referable to *malayicus* for the first time at Gunong Brinchang, Pahang, the type-locality of *malayicus*. We carefully studied the male genitalia and wing markings of this male specimen comparing with the published descriptions and illustrations of forms of *Austrozephyrus*, and came to a conclusion that *malayicus* is not a distinct species, but a subspecies of *absolon* in Malay Peninsula as formerly assumed by CORBET. The details of the discovery and descriptions of the wing marking and genitalia are given as follows.

Before going further we express our cordial thanks to Mr. G. T. HOWARTH of the British Museum (Natural History) for his kindness lending us a pair of *Austrozephyrus absolon absolon* (HEWITSON), which is very much useful to study our material, and to Mr. KAZUMI NAKAYAMA, general manager of Nissho-Iwai Co. Ltd., in Singapore who gave kind conveniences in various ways to NISHIMURA during his trip in Malay Peninsula.

Austrozephyrus absolon malayicus (PENDLEBURY, 1939)

Thecla malayica PENDLEBURY, 1939, J. F. M. S. Mus. 18: 391.
Thecla absolon malayica CORBET, 1941, J. F. M. S. Mus. 18: 812.
Austrozephyrus absolon malayicus HOWARTH, 1957, Bull. Brit. Mus. (Nat. Hist.) Ent. 5: 271.

General description of the male specimen: Closely resembling HOWARTH's form 1 of subsp. *absolon* illustrated by PIEPERS and SNELLEN (Rhopalocera of Java, Erycinidae and Lycaenidae, pl. XXV, fig. 121 a) and by HEWITSON (Illustrations of Diurnal Lepidoptera Vol. II, pl. 30, figs. 11 & 12), but black border on upperside of forewing more expanded. Upperside metalic green, not so golden

* Another female specimen is mentioned in "The butterflies of the Malay Peninsula, 2nd ed." of CORBET and PENDLEBURY(1956); it was collected at Pine Tree Hill in 1952 (J. A. HISLOP).

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as in *Chrysozephyrus aurorinus* and not so greenish or bluish as in *Neozephyrus taxila* or *Favonius jezoensis*, with very broad marginal black border on forewing, a considerably narrow border (narrower than in *C. aurorinus*) on hindwing. Underside dark fuscous, darker than that of the female of *C. aurorinus*; forewing with a slight purplish tinge on apical portion, a narrow dark discocellular bar, slender dirty white postdiscal streak proximally bordered with dark brown, submarginal blackish band, and a very large orange subtornal marking occupying posterodistal 1/3 of wing; hindwing with a slight purplish tinge on the ground colour of basal 1/2 of wing, discocellular bar indistinct, dirty white postdiscal streak very slender, V-shaped, almost straight from vein 1b to costa, but only slightly slipped at vein 2, marginal area dark brown with obscure double purplish bands, an anteriorly disappearing fine purplish marginal streak, the black-centred orange-red spot in cell 2 which is rounded and shifted proximally and not touching wing margin as in many *Chrysozephyrus* and *Favonius* spp., and a black tornal spot proximally bordered with the orange-red marking which does not expanded beyond the middle of cell 1b + c (so that it is not confluent with the orange-red spot in cell 2), but extending basally along inner margin of wing as in *Favonius cognatus*. Tail of

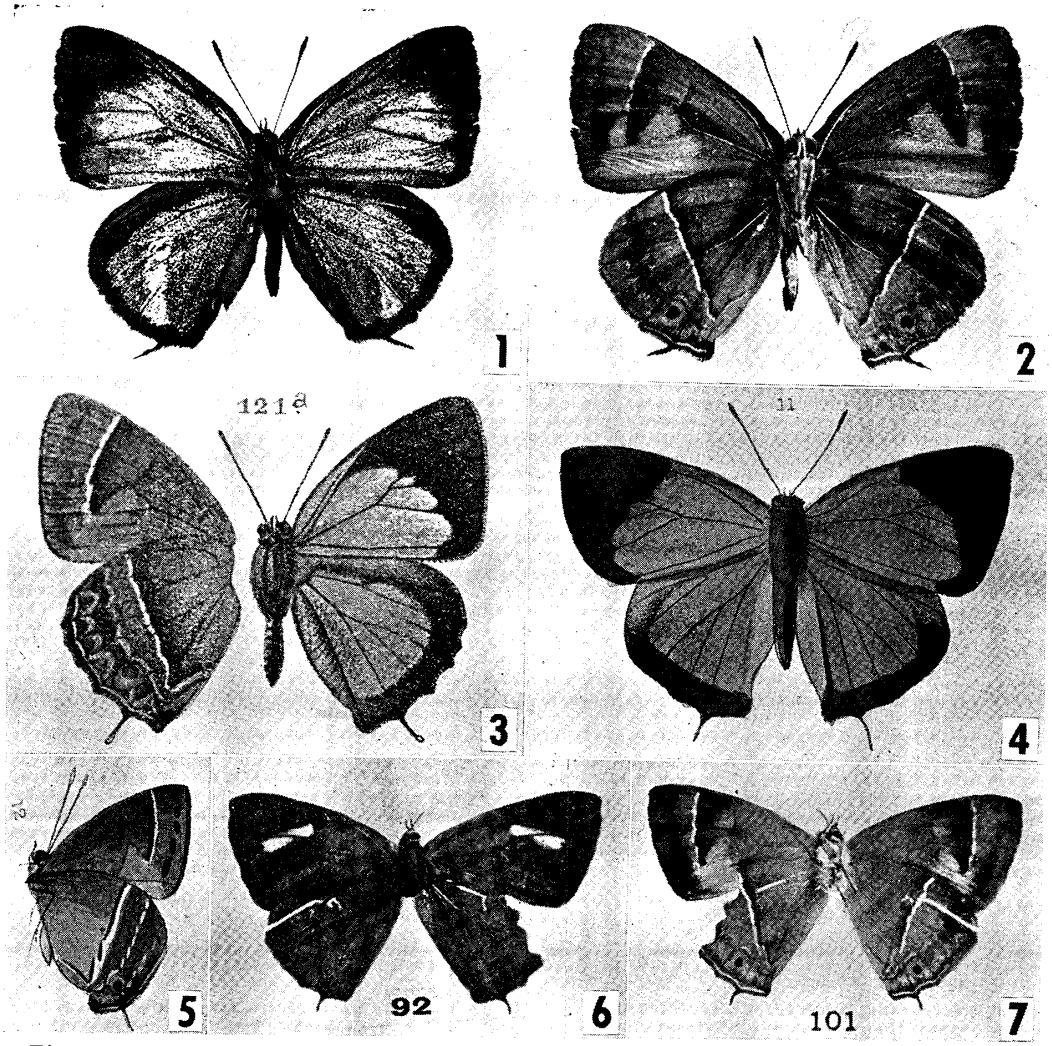

Fig. 1. *Austrozephyrus absolon malayicus* (PENDLEBURY, 1939), ♂ upperside, Gunong Brinchang, Cameron Highlands, Malay Pen., 11. April 1969 (G. NISHIMURA); fig. 2. same, underside; fig. 3. *A. absolon absolon* (HEWITSON, 1865), ♂, from PIEPERS & SNELLEN: fig. 4. *A. absolon absolon* (HEWITSON, 1865), ♂ upperside, from HEWITSON; fig. 5. same, underside, from HEWITSON; fig. 6. *A. absolon malayicus* (PENDLEBURY, 1939) holotype ♀, upperside, from HOWARTH; fig. 7. same, underside.

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hindwing moderately long, white-tipped. Antenna black, its ventral surface white-checkered on shaft, orange on club; compound eye large, densely long-haired (the hairs slightly longer than those of *C. aurorinus* and almost 2× as long as those of *N. taxila*).

Length: Forewing 20.0 mm; wing expanse 35.0 mm.

Specimen examined: 1♂, Gunong Brinchang (6664 ft.), Cameron Highlands, Pahang, Malay Peninsula, 11. April 1969, G. NISHIMURA leg. (in the collection of G. NISHIMURA).

Comparison between absolon and malayicus: We have not the specimen of *absolon*, so that we compare our material with the published figures of *absolon*. The coloured illustrations on both sides of *absolon* in the work of PIEPERS and SNELLEN are very excellent, and the illustrations seem to be much better than an indistinct photograph. We mainly compared our specimen with these illustrations. On the other hand, the original descriptions of *absolon* by HEWITSON accompany the hand-colourd (not colour-printed) illustrations of the type-specimen. These illustrations are much less accurate than those given by PIEPERS and SNELLEN, but they are in the original descriptions so that we suspect them as possible as we can rely on its accuracy. Our specimen and the above-mentioned illustrations of *absolon* are almost of the same size (length of forewing 20.0 mm–20.5 mm) and the comparison between them is rather easy.

Upperside of forewing: In subsp. *absolon*, marginal black border narrowest at middle of cell 1 b+c where it is almost as broad as, or slightly narrower than width of cell 1 b+c at termen, then strongly expanding anteriorly to the posterodistal corner of discoidal cell leaving a small greenish area (slightly wider than basal margin of cell 4) at basal portion of cell 4, obliquely cutting anterodistal corner of discoidal cell, strongly incised at subcostal area to origin of vein 11, the inner margin of the black border ending at tip of vein 11; width of black border at costa 1/2 length of forewing. In subsp. *malayicus*, the black border narrowest and almost of the same width at cells 1 a and 1 b+c where it is 1/3 as broad as width of cell 1 b+c at termen (1 mm excluding fringe, 1.2 mm including fringe), then gradually expanding anteriorly to the middle of vein 4 (where 8 mm in width including fringe, so that the width of greenish area of cell 3 at least 1/2 length of vein 4), weakly incised cells 4 and 5 leaving a considerably broad greenish area in the cells (width of greenish area at vein 5 equal to 4/5 length of discocellular vein), then the inner margin of black border reaching to subbasal portion of vein 6, and ending near tip of vein 10, leaving small greenish area in cell 6 and greenish streaks (5 mm in length) in cells 8 and 10; width of black border at costa 5.5 mm and almost 1/4 length of forewing.

Upperside of hindwing: In subsp. *absolon*, marginal black border including fringe 1/3× as wide as length of vein 4 (about 2.5–3 mm including fringe in the illustration of PIEPERS and SNELLEN) from tornus to cell 5, then widening and obliquely cutting cell 6, with inner margin of the border reaching to subbasal portion of vein 7, and occupying most of cell 7 except for narrow greenish area along anterior margin of discoidal cell. In subsp. *malayicus*, the marginal black border including fringe 1/5× as wide as length of vein 4 (1.5 mm including fringe, 1 mm excluding fringe) from tornus to cell 5; otherwise similar to subsp. *absolon*, the black border almost of the same width, but only slightly wider at vein 2, in *malayicus*.

Underside of forewing: In subsp. *absolon*, dirty white postdiscal streak originating from vein 2 and ending in costa; dark submarginal band present even in cell 1 b+c; subtornal orange area almost triangular in shape, expanding from base of vein 3 to a portion of vein 1b between inner margin of dark submarginal band and near the middle of the vein, so that the orange area neither occupying cell 3, nor expanding in the part of cell 2 between dark submarginal band and postdiscal streak. In subsp. *malayicus*, dirty white postdiscal streak disappearing in cell 2, originating only from vein 3 and ending in costa; dark submarginal band absent in cell 1 b+c, but more prominent than subsp. *absolon* (of PIEPERS and SNELLEN) in cell 2, gradually becoming narrower and obscure towards costa; subtornal orange area not triangular in shape, expanding from subbasal portion of cell 3 (width in cell 3 about 1.5 mm) to a portion of vein 1 b between submarginal portion and basal 1/3 point of vein 1 b; the orange area entirely replacing the submarginal dark band in cell 1 b+c and proximally expanding slightly beyond the level of origin of vein 2, and in cell 2 occupying even the area between inner margin of dark submarginal band and dark postdiscal area, which in subsp. *absolon* is bor-

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dered with white postdiscal streak.

Underside of hindwing: In subsp. *absolon* of PIEPERS and SNELLEN marginal white streak and double pale submarginal bands prominent from tornus to apex. In subsp. *malayicus*, marginal purplish white streak prominent only in cells 1b+c and 2, then becoming very obscure anteriorly and almost absent in cells 5 and 6; double purplish submarginal bands indistinct, not sharply defined as in an inner straight band and an outer zigzag band; orange spots in cells 1a, 1b and 2 almost as in subsp. *absolon*.

Male genitalia: Through the courtesy of Dr. T. G. HOWARTH, SHIRÔZU fortunately had borrowed a pair of valuable specimens of rare *absolon* from Java, and SAIGUSA illustrated their genitalia some years ago. As these material were already sent back to the British Museum, we can not exactly compare the genitalia of *absolon* and *malayicus* directly. So the compraison is carried between the SAIGUSA's illustrations of the genitalia of *absolon* and the genitalia of *malayicus*. HOWARTH's illustrations of *absolon* are also helpful. We first give the detailed descriptions for *malayicus*, then mention some differences which are seen between the above-mentioned illustrations and *malayicus* genitalia. Accordingly the differences mentioned below may not be exact in the strict sense, and also may not be of the subspecific but within the individual variation. In any case the differences are not enough to separate *malayicus* from *absolon* as a distnct species considering their allopatric distribution.

Male genitalia of *malayicus*: Ring broad even at vincular portion; tegumen broad, vinculum with a short saccus, and with a roundly produced posteroventral projection which serves a condyle for valvae; uncus trifurcate, its median process sharply pointed, lateral ones bluntly ended, both weakly curving ventrally; socius being of a semicircular lobe; area between socius and tegumen not membranous but weakly sclerotized; brachium much reduced, represented by a narrow sclerite which is fused with socius at base, directs proximally, and does not porject into a free process as in all the other genera of Theclini. Valva rather small, its distal protion broadly bifurcate, dorso-proximal portion projecting into a short slender process; valvae not sharply separated from each other, but rather weakly fused with each other partly. Juxta much reduced, represented by a slender transverse sclerite. Phallus moderately long and slender, subzonal sheath 1/2× as long as suprazonal sheath; apical portion of aedeagus pointed, and with a short perivesical area at left side, which has a small weakly sclerotized, dentate cornutus.

Comparison of genitalia of *malayicus* and *absolon*: In *absolon*, median process of uncus almost overlapped by lateral processes in lateral aspect both in SAIGUSA's illustration and HOWARTH's one, while in *malayicus* the median process projecting above the lateral processes almost parallel to the latter. Valva of *absolon* slightly broader than that of *malayicus*.

Comparison with female *malayicus* and subsp. *thamar*: The orange area on under side of forewing in the female type-specimen of *malayicus* is intermediate between those of the males of *malayicus* and *absolon* judging from the photograph given in the HOWARTH's work. The postdiscal streak on underside of forewing of the type weakly appears in the anterior 1/2 of the cell 2. According to HOWARTH (1957), the third subspecies of *absolon*, subsp. *thamar* TOXOPEUS, 1935 from Sumatra geographically located between *absolon*- and *malayicus*-localities, has the largest orange area on underside of forewing among three known subspecies, and the orange area extending anteriorly "as far as the top of the cell bar" (HOWARTH) in the male. It is noteworth that subsp. *malayicus* is intermediate in this character between subspp. *absolon* and *thamar*.

Remarks: Even the discovery of a male specimen of *malayicus*, our material is still not enough to clarify the definite differences between *absolon* and *malayicus*. Although there are considerable differences between these two forms in the wing markings, and possibly and slightly in the male genitalia as described above, these differences are not sufficient to prove that these two forms represent two distinct biological species in the sense of the modern biological systematics. The differences between these two forms are greater in degree than those among three species of the genus *Favonius, ultramarinus, latifasciatus* and *jezoensis*. Between the former two species the constant differences of the male genitalia are still not established. The wing markings of the first and the third species are similar to each other that for the correct identification we sometimes need to examine

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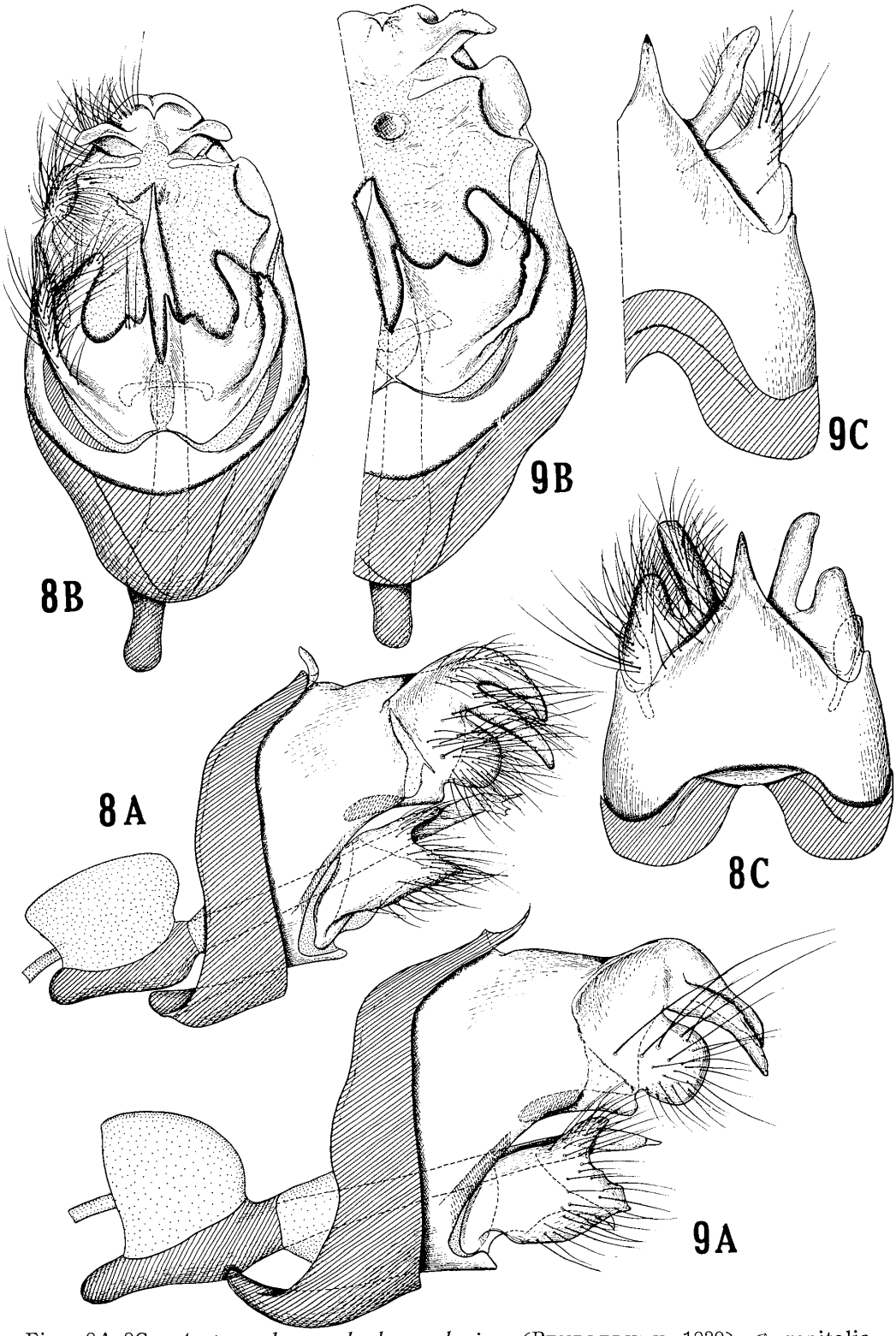

Figs. 8A-8C. *Austrozephyrus absolon malayicus* (PENDLEBURY, 1939), ♂ genitalia of the present specimen; figs. 9A-9C. *A. absolon absolon* (HEWITSON, 1865), ♂ genitalia of the specimen with the following data (T. G. H. 1958-313/Ex OBERTHÜR Coll. Brit. Mus. 1927-3/ Java, Rés. Soekaboemi, J. B. Ledru 1895): A. lateral aspect of genitalia; B. posteroventral aspect of genitalia; C. dorsal aspect of dorsum; in 9B and 9C most of the left and right halves are omitted respectively.

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the male genitalia which have a slight difference in the shape of the apical portion of valva. But these species are synpatric or nearly so in distribution and their biology and morphology of pre-imaginal stages are different. Thus each of them is apparently regarded as a good biological species. In such a case of *absolon* and *malayicus* as being allopatric in distribution, absence of biological data and lacking in the closely related synpatric species for either one of them, from which we may evaluate the relation between the morphological and genetic differences and apply these data to determine the systematic relationship of allopatric forms, it is quite difficult to prove each of these forms represents a distinct biological species. Under such circumstances, we should not treat these forms as the different species but as subspecies within a single species. It is much expected to obtain more material of both *absolon* and *malayicus* even for establishing the definite morphological differences between them.

In this paper we do not discuss the systematic position of the genus *Austrozephyrus* HOWARTH confining the purpose of the paper to the report of the discovery of the male *malayicus* and its relation to *absolon*, and suspend the phylogenetical discussion to the further review of the entire tribe Theclini in future, but it is clear that the genus *Austrozephyrus* does not have any close relationships to the *Favonius*- and the *Neozephyrus*-groups, both having the metalic green upperside of the wings. The metalic green coloration of upperside of the wings is apparently a convergence character attained independently by the several groups in the tribe Theclini. The genus *Austrozephyrus* has the greatly specialized male genitalia even in the entire scope of the tribe Theclini, and corresponding to the invasion into the center of the Oriental Region in its geographical distribution, its systematic problem will offer the important data for the discussion of the origin and phylogeny of the tribe Theclini. Of the same reason additional materials of *Austrozephyrus borneanus* (PENDLEBURY) are very much expected, because this species can not be considered congeneric with *absolon* by us judging

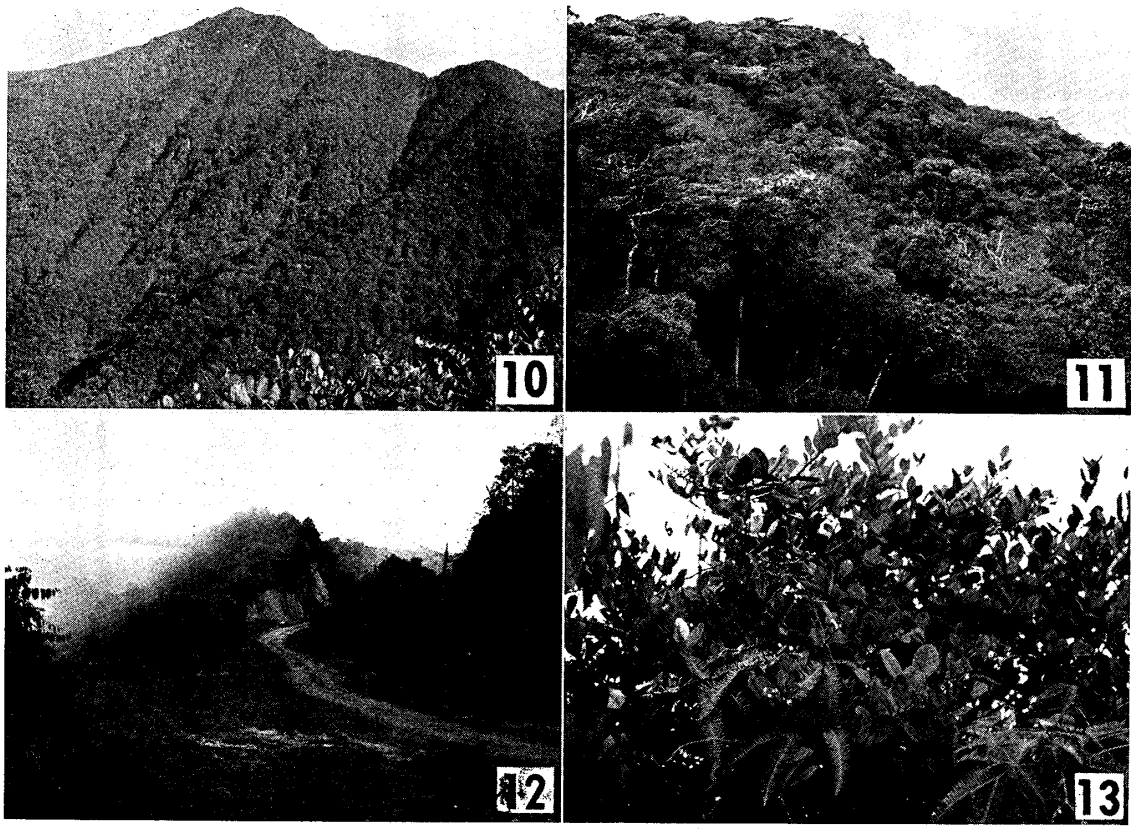

Fig. 10. A mountain near Gunong Brinchang, from the top of the latter; fig. 11. Vegetation near the top of Gunong Brinchang; fig. 12. Collecting site of the present male specimen; fig. 13. A shrub on which the specimen were sitting.

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from the genitalia-illustrations made by HOWARTH (1957). This species is still known only from the holotype male collected at Marei Parei (5,000 ft.), Mt. Kinabalu, N. Borneo in 30th April 1929 by H. M. PENDLEBURY.

Collecting data: The present male specimen was collected at the top of Gunong Brinchang of the mountaneous region in the central part of Malay Peninsula, and these mountains are densely wooded. At about 2.00 p.m. of 10th April, NISHIMURA found a metalic green lycaenid rapidly flying away across the top of Gunong Brinchang. Next day an hour after sun-rise, he found the above-described male slowly flying and sitting on shrubs along the ridge near the top, and collected it sitting on a shrub with pink flowers. In the same day he stayed at the top untill the noon, and found another male which was swiftly flying around the top like Japanese *Chrysozephyrus ataxus kirishimaensis*, but could not collect this male. He also found many of *Parantica sita*, *Celastrina* spp., and *Delias* sp. near the top. The type female of *malayicus* was collected on the 21st July, but in Japan the females of Theclini are often found until autumn though the males are emerged from early summer, so that the time of appearance of *malayicus* seems to be long as in the some Japanese Theclines.

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リュウキュウウラボシシジミは石垣島にも産する

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リュウキュウウラボシシジミ *Pithecops corvus ryukyuensis* SHIRÔZU は琉球では沖縄本島および西表島に分布することが知られているが，不思議にも石垣島からはこれまで採集の記録がない．1964年3～4月における琉球昆虫相調査の折も，私は沖縄本島および西表島で本種を多数採集したが，石垣島ではとくに注意したにもかかわらず，本種を目撃すらできなかった．西表島と石垣島は隣接して位置し，その生物相はほぼ完全に同一と考えられるのに，どういう理由で本種が石垣島に欠けているのか，長い間私には疑問であった．

1970年5月の日本鱗翅学会25周年記念大会に出席のため京都を訪れた折，岸井尚氏（平安高校教諭）より次のデータの本種を贈られ，石垣島におけるこの蝶の分布が確認できたことは，上記のいきさつもあってとくに嬉しい次第であった．

1♂，石垣島オモト岳 (Mt. Omoto, Ishigaki Island), 5. viii. 1964, 近藤詔一氏採集 (SHOICHI KONDO leg).

Pithecops は森林性の蝶で，石垣島は農耕のため森林の破壊がひどく，そのため本種は生息地をうばわれ，森林の残ったオモト岳にわずかに残存していたものであろうと考えられる．オモト岳において近藤氏は数頭をえられ，岸井氏より私に贈られたのはその中の1頭であるという．資料を提供された岸井尚・近藤詔一の両氏に深謝する．

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